

- 1 1. A multispeed transmission comprising:
- 2 a gear set with a first input, a second input, and an output, arranged so that
- 3 when the first input is rotated, and the second input is rotated in the same direction
- 4 but at a slower rate than the first input, then the output rotates in the same direction
- 5 but at a faster rate than the first input;
- 6 clutches and associated gears to rotate the second input at any of at least
- 7 two fixed ratios of the rate of rotation of the first input ;
- 8 a clutch to connect the second input to an output shaft; and
- 9 a clutch to connect the output to the output shaft.
- 10 2. The transmission of claim 1 in which the gear set comprises a planetary
- 11 gear set with one carrier and two sun gears, the first input is one sun gear of the
- 12 planetary gear set, the second is the carrier of the planetary gear set, and the
- 13 output is the other sun gear of the planetary gear set.
- 14 3. The transmission of claim 1 in which the gear set comprises a planetary
- 15 gear set with one carrier, one sun gear, and one ring gear, the first input is the
- 16 carrier gear of the planetary gear set, the second input is the sun gear of the
- 17 planetary gear set, and the output is the ring gear of the planetary gear set.
- 18 4. The transmission of claim 1 in which the gear set comprises a planetary
- 19 gear set with one carrier, one sun gear, and one ring gear; the first input is the
- 20 carrier gear of the planetary gear set, the second input is the ring gear of the
- 21 planetary gear set, and the output is the sun gear of the planetary gear set.
- 22 5. The transmission of claim 1 in which the gear set comprises a gear
- 23 assembly with one carrier carrying two or more bevel gears, one input bevel gear,

1 and one output bevel gear, in which the first input is the carrier gear of the bevel
2 gear assembly, the second input is the input bevel gear of the bevel gear assembly,
3 and the output is the output bevel gear of the bevel gear assembly.

4 6. The transmission of claim 1 further comprising an input shaft, clutches,
5 and associated gears to rotate the first input at any of at least two fixed ratios of the
6 rate of rotation of the input shaft.

7 7. The transmission of claim 1 further comprising an additional clutch and
8 associated gear reduction means arranged to connect the output to the output shaft
9 through a gear reduction.

10 8. The transmission of claim 1 further comprising an additional clutch and
11 associated gear reduction means arranged to connect the second input to the
12 output shaft through a gear reduction.

13 9. The transmission of claim 7 further comprising an additional clutch and
14 associated gear reduction means arranged to connect the second input to the
15 output shaft through a gear reduction.

16 10. A multispeed transmission for farm machinery comprising:
17 a first section connected to and receiving power from an engine, the first
18 section including an input shaft interconnected with the engine and at least a first ,
19 and a second gear set, each with a different gear ratio, interconnected with the input
20 shaft, with each gear set capable of driving a first intermediate shaft; with the each
21 gear set each controlled by a corresponding clutch, and with all the clutches driven
22 by the input shaft;

23 a second section comprising;

1 a second intermediate shaft interconnected with and driven by the first
2 intermediate shaft,

3 a fourth and a fifth gear set interconnected with the second
4 intermediate shaft and controlled by a fourth and fifth clutch, respectively, with the
5 fourth and fifth gear sets having different gear ratios;

6 an intermediate planetary gear set with a carrier, an input sun gear,
7 input planetary gears, an output sun gear, output planetary gears, and an output
8 shaft attached to the output sun gear, with the carrier attached to gears of the fourth
9 and fifth gear sets, and the input sun gear attached to the first intermediate shaft;

10 an output planetary gear set with a carrier, a first ring gear, a second
11 ring gear, a first sun gear, a first plane of planetary gears, a second sun gear, and a
12 second plane of planetary gears, with the first sun gear attached to the second
13 intermediate shaft and the second sun gear attached to the output shaft of the
14 intermediate planetary gear set;

15 a sixth clutch attached to and, when engaged, braking the first ring
16 gear of the output planetary gear set;

17 a seventh clutch attached to and, when engaged, braking the second
18 ring gear of the output planetary gear set;

19 an eighth clutch attached to the carrier of the output planetary gear set
20 and to the second intermediate shaft and, when engaged, connecting the carrier of
21 the output planetary gear set to the second intermediate shaft;

22 a ninth clutch attached to the carrier of the output planetary gear set
23 and to the output shaft of the intermediate planetary gear set and, when engaged,

1 connecting the carrier of the output planetary gear set to the output shaft of the
2 intermediate planetary gear set; and
3 a transmission output shaft attached to the carrier of the output
4 planetary gear set.

5 11. The transmission of claim 10 further including a reverse clutch and reverse
6 gearing in the first section so that when the reverse clutch is engaged, the first intermediate
7 shaft rotates in the reverse direction from the direction of rotation when any other clutch in
8 the first section is engaged.

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